

WHAT IS CLAIMED IS:

1. A selective polarization matching filter comprising:
 a filter housing formed of a first material;
 a replicate property matching material disposed encapsulated within
 said filter housing; and
 a pair of substantially parallel plates disposed encapsulated within
 said filter housing on opposite sides of said replicate property matching material,
 said plates being formed of a second material different from said first material.

2. A selective polarization matching filter according to claim 1, further
 comprising a pair of grounding leads disposed coupled to said plates,
 respectively, and extending to an exterior of said filter housing.

3. A selective polarization matching filter according to claim 1,
 wherein said first material is a polymer, said second material is a polymer
 different from said first material, and said replicate property matching material is
 a dielectric material.

4. A selective polarization matching filter according to claim 3,
 wherein said first material is polyurethane.

5. A selective polarization matching filter according to claim 4,
 wherein said second material is acrylonitrile-butadiene-styrene.

6. A selective polarization matching filter according to claim 5,
 wherein said replicate property matching material is selected in accordance with
 dielectric polarization characteristics of ^{the} a to-be-detected entity.

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1 7. A selective polarization matching filter according to claim 6,
2 wherein said replicate property matching material comprises one of nano-
3 structured human keratin protein polymer, nano-structured animal keratin protein
4 polymer, or a polymer blend.

1 8. A selective polarization matching filter according to claim 3,
2 wherein said second material is acrylonitrile-butadiene-styrene.

1 9. A selective polarization matching filter according to claim 3,
2 wherein said replicate property matching material is selected in accordance with
3 dielectric polarization characteristics of ^{the} ~~a~~ to-be-detected entity.

1 10. A selective polarization matching filter according to claim 9,
2 wherein said replicate property matching material comprises one of nano-
3 structured human keratin protein polymer, nano-structured animal keratin protein
4 polymer, or a polymer blend.

1 11. A selective polarization matching filter according to claim 1,
2 wherein said first material is a polymer, said second material is metal, and said
3 replicate property matching material is a conducting material.

1 12. A selective polarization matching filter according to claim 11,
2 wherein said first material is polyurethane.

1 13. A selective polarization matching filter according to claim 12,
2 wherein said second material is one of copper, brass, aluminum and steel.

1 14. A selective polarization matching filter according to claim 13,
 2 wherein said replicate property matching material is selected in accordance with
 3 *A* dielectric polarization characteristics of ^{*the*} ~~a~~ to-be-detected entity.

1 15. A selective polarization matching filter according to claim 14,
 2 wherein said replicate property matching material is one of gold, silver, platinum,
 3 palladium or iron.

1 16. A selective polarization matching filter according to claim 1,
 2 wherein said replicate property matching material is selected in accordance with
 3 *A* dielectric polarization characteristics of ^{*the*} ~~a~~ to-be-detected entity.

1 17. A selective polarization matching filter according to claim 16,
 2 wherein said replicate property matching material is one of nano-structured
 3 human keratin protein polymer or nano-structured animal keratin protein
 4 polymer.

1 18. A selective polarization matching filter according to claim 16,
 2 further comprising an auxiliary attachment containing one of 2-propanol or
 3 2-methyl-2-propanol operatively cooperating with the filter.

1 *See* 19. A selective polarization matching filter comprising:
 2 *A2* a filter housing formed of a replicate dielectric property matching
 3 material, said filter housing defining a cavity therein having a pair of exit ports;
 4 a dielectric material disposed in said cavity, said dielectric material
 5 being different from said replicate dielectric matching material; and
 6 a pair of conducting inserts disposed in said exit ports, respectively,
 7 said conducting inserts extending to an exterior of said filter housing.

1 20. A selective polarization matching filter according to claim 19,
2 wherein said dielectric material disposed in said cavity is air.

1 21. A selective polarization matching filter according to claim 19,
2 further comprising an auxiliary attachment containing one of 2-propanol or
3 2-methyl-2-propanol operatively cooperating with the filter.

1 *Sub* ~~22.~~ A selective polarization matching filter comprising a composition of
2 *A3* materials configured to generate an opposite polarization pattern based on a
3 polarization pattern of a to-be-detected entity.

1 23. A selective polarization matching filter according to claim 22,
2 wherein said composition of materials comprises a replicate property matching
3 material selected in accordance with dielectric polarization characteristics of the
4 entity to be detected.

1 24. A selective polarization matching filter according to claim 23,
2 wherein said composition of materials further comprises at least one dielectric
3 material.

1 25. A selective polarization matching filter according to claim 22,
2 wherein said composition of materials comprises acrylonitrile-butadiene-styrene
3 (ABS) disposed encapsulated in polyurethane.

1 26. A selective polarization matching filter according to claim 25,
2 wherein said composition of materials further comprises a replicate dielectric
3 property matching material disposed encapsulated in said polyurethane and
4 enclosed by said ABS.

1 *Sub*
 2 *A4* ~~27.~~ A method of manufacturing a selective polarization matching filter
 3 comprising assembling a composition of materials to generate an opposite
 polarization pattern based on a polarization pattern of a to-be-detected entity.

1 28. A method according to claim 27, wherein said assembling step
 2 comprises encapsulating a replicate property matching material selected in
 3 accordance with dielectric polarization characteristics of the entity to be detected
 4 in a dielectric material.

1 29. A method according to claim 28, wherein the assembling step
 2 further comprises encapsulating a pair of substantially parallel plates in the
 3 dielectric material and enclosing the replicate property matching material with the
 4 plates.

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